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Patent
Attorney's Docket No. 1010315-000092

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	**Mail Stop:** **APPEAL BRIEF - PATENTS**
Kent Malmgren et al.	
Application No.: 09/651,130	Group Art Unit: 1771
Filed: August 3, 2000	Examiner: Victor S. Chang
For: ABSORBENT FOAM MATERIAL, A METHOD OF PRODUCING IT AND AN ABSORBENT STRUCTURE CONTAINING SAID FOAM MATERIAL	Confirmation No.: 1064
	Appeal No.: 2

APPEAL BRIEF

Mail Stop APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is from the decision of the Office issued on September 18, 2006, finally rejecting claims 1, 2, 4-13, 15 and 20, which are reproduced as the Claims Appendix of this brief.

☐ A check covering the ☐ $250.00 (2402) ☐ $500.00 (1402) Government fee is filed herewith.

☒ Charge ☐ $250.00 (2402) ☒ $500.00 (1402) to Credit Card. Form PTO-2038 is attached.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

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I. Real Party in Interest

The present application is assigned to SCA Hygiene Products AB which is the real party in interest.

II. Related Appeals and Interferences

Appeal No. 2006-0784 was previously pending in this application. The Appeal was dismissed on April 26, 2006, because a Request for Continued Examination was filed with accompanying papers on April 7, 2006.

Attached hereto, in the Related Proceedings Appendix, are copies of the Appeal Brief filed on August 31, 2005, the Examiner's Answer mailed on October 6, 2005, and the Reply Brief filed on December 6, 2005.

III. Status of Claims

Claims 1, 2, 4-13, 15 and 20 are pending, rejected and presently appealed. A copy of the claims involved in the appeal is contained in an attached Claims Appendix.

IV. Status of Amendments

No amendments have been filed subsequent to the final rejection of September 18, 2006.

V. Summary of Claimed Subject Matter

The claimed invention relates generally to liquid absorbent open-cell polymeric foam material having properties which make it suitable for use as an absorbent structure in absorbent articles. Page 1, lines 3-7.

In a preferred embodiment, the foam is built of a continuous three-dimensional network or cellular structure of a solid, which surrounds a gaseous phase dispersed therein. Preferably, the solid phase is a polymeric material, which forms the cell walls in a continuous cellular phase. The cells may have different shape, size, and topography and be open or closed. Preferably, the cell structure is open, which means that the cells communicate with each other. The term foam, as defined according to the present invention, also encompasses materials where fibers of different types are integrated in the cell structure. Page 4, lines 13-20.

A preferred open-cell polymeric foam material has multifunctional absorption properties: absorption acquisition capacity, distribution capacity and storage capacity. The material should thus be able to simultaneously fulfill the functions of a liquid acquisition layer, distribution layer and storage layer. Page 5, lines 1-5.

In order that an absorbent material has the desired multifunctional properties, it is desirable to have absorption capacity in two different forms, capillary liquid and gel liquid. Gel liquid refers to liquid held in pores smaller than 3 μm and capillary liquid refers to loosely bound liquid in pores larger than 3 μm and up to 500 μm.

Gel liquid is specifically defined in the specification,."Gel liquid refers to liquid held in pores smaller than 3 μm and capillary liquid refers to loosely bound liquid in pores larger than 3 μm and up to 500 μm." Specification, page 5, lines 19-20.

Gel liquid is the liquid that is held most firmly in the structure. It is preferable that the gel liquid absorption, determined as the total amount of liquid in pores below 3 μm, according to pore volume distribution (PVD) measurements, is at least 4 g/g and more preferably at least 5 g/g of synthetic urine. The capillary liquid absorption, determined as the total amount of liquid in pores between 3-100 μm, according to PVD measurements, is preferably at least 8 mL/g, more preferably at least 10 mL/g. Page 5, lines 20-29.

The foam should have defined values of liquid acquisition, distribution and storage capacity. Thus, in a preferred embodiment, it should have an absorption rate at wetting of at least 0.4 ml/s, more preferably 0.5 ml/s, for a round sample having a 50 mm diameter, a liquid distribution capacity at an inclination of 30° of at least 15 g/g, more preferably at least 16 g/g, and a liquid storage capacity of at least 9%, more preferably at least 11%, measured through centrifuge retention capacity, for synthetic urine test liquid. Page 5, line 31 – Page 6, line 7.

The foam material may be used as the entire or part of the absorbent structure in absorbent articles such as diapers, pant diapers, sanitary napkins, incontinence guards, wound dressings, bed protections, etc. Page 4, lines 10-12.

Further, the foam material may be formed into any desired three-dimensional shape, which is determined by the shape of the mould in which the foam is applied during freezing steps. Page 11, lines 10-12.

VI. Grounds of Rejection to be Reviewed on Appeal

Claims 1, 2, 4-13, 15 and 20 are currently pending and stand rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over *Chen et al.* (USPN 6,261,679).

VII. Argument

Appellants submit that the Office has not established a *prima facie* case of anticipation and the rejection must therefore be withdrawn.

Claims 1, 2, 4-13, 15 and 20 stand rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over *Chen et al.* (USPN 6,261,679).

Appellants traverse this rejection.

Chen does not anticipate or render obvious the claimed invention for at least three reasons.

First, *Chen* does not teach or suggest an absorbent material possessing the claimed absorption properties: absorption rate, liquid distribution capacity and liquid storage capacity.

Second, *Chen* does not teach or suggest an absorbent material with the claimed pore size of between 0 and 3 μm.

Third, *Chen* does not teach or suggest an absorbent material that is capable of storing gel liquid.

Absorption Properties

The Office asserts that the teachings of *Chen* anticipate the claimed invention. However, the Office admits that *Chen* is silent about the claimed absorption properties (absorption rate, liquid distribution capacity and liquid storage capacity). See Office Action of September 18, 2006, page 3.

The Office's basic position is that a *prima facie* case of anticipation has been established because (allegedly) the claimed and *Chen* products are identical in structure or composition, or are produced by identical or substantially identical processes. The principle the Office asserts is articulated in MPEP § 2112.01.

However, the Office has not properly considered the conditions of the principle found in MPEP § 2112.01. That is, MPEP § 2112.01 recites that:

> When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not. ... Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433.

Appellants have met the burden of showing the claimed and *Chen* products are not the same. Appellants have presented evidence that the *Chen* products do not necessarily possess the characteristics of the claimed product. The evidence at least shows that *Chen* does not disclose a liquid absorbent material with the claimed properties (absorption rate, liquid distribution capacity and liquid storage capacity).

The Office relies on steps found throughout the specification of *Chen* to allege that *Chen* teaches a process for producing an absorbent material that results in substantially the same product as the claimed absorbent material. However, producing the claimed foam requires a careful balancing between competing properties and this is not taught by *Chen*. The alleged steps, absent improper hindsight reconstruction, do not teach one skilled in the art to make the claimed invention. That is, one skilled in the art, following the teachings of *Chen*, is not taught the details and precise balancing of a) manner, b) timing, c) amounts, d) temperatures, e) concentrations, etc., necessary to arrive at the claimed invention. The Specification of the present application sets out specific embodiments of a) manner, b) timing, c) amounts, d) temperatures, e) concentrations, etc, at page 8, line 27 to page 11, line 14 and Examples 1-3. However, the claimed invention is not limited to the disclosed preferred embodiments.

The steps alleged by the Office teach, at most, a generic open-cell polymeric foam. However, teaching a generic open-cell polymeric foam does not teach the claimed open-cell polymeric foam.

One skilled in the art, following the teachings of *Chen*, is not taught how to manipulate the complex, multi-parameter process in order to arrive at a foam with the claimed absorption rate, liquid distribution capacity and liquid storage capacity while producing a composition with the ability to store gel liquid. *Chen* does not teach one skilled in the art how to properly optimize the multiple absorption properties.

One reason *Chen* does not teach the claimed invention is that *Chen* does not recognize the competing (opposite) absorption properties. For example, known

absorbent materials were able to provide either a high absorption rate or a high liquid storage capacity. But, not both. See Table 1 and Examples 1-3 of the Specification. That is, adjusting the process parameters to provide foam with a high absorption rate typically results in a low liquid storage capacity. And, adjusting the process parameters to provide a foam with a high liquid storage capacity typically results in a low absorption rate. *Chen* does not recognize this concern. Nor, does *Chen* teach one skilled in the art how to overcome these competing properties.

Thus, obtaining the claimed absorbent material requires an optimization and careful balancing of the process parameters that overcome these competing properties. This is not taught by *Chen*.

Moreover, this optimization and careful balancing must be one in a manner that producing an absorbent material with the ability to store gel liquid. *Chen* does not do this.

Appellants followed the teachings of *Chen* to provide experimental evidence showing that following the teachings of *Chen* does not produce the claimed invention. That is, Appellants prepared an absorbent material according to the teachings of *Chen*.

The Office relies on steps from *Chen* that are generic in the a) manner, b) timing, c) amounts, d) temperatures, e) concentrations, etc., of the process. The Office asserts that *Chen* teaches:

> [a] process of a) mixing fibers and binder resins [col. 11, lines 47-55; and col. 21, line 43 through col. 22, line 25], b) foaming by gas injection or mechanical agitation [column 16, lines 10-24], c) optionally incorporating a crosslinking agent [col. 29, line 20 through col. 31, line 34], d) molding foamed mixture [col. 26, lines 13-23], and e) freeze drying (col. 17, line 66 through col. 18, line 39) ... .

Office Action of September 18, 2006, page 3.

Reference to the cited portions of *Chen* further reveals the lack of detail disclosed in *Chen*. Thus, one skilled in the art is left without guidance except for the Examples. There is one Example in *Chen* that basically follows the steps upon which the Office relies, Example 3. Example 3 is the most reasonable choice because of the use of carboxymethylcellulose (CMC), an anionic polymer, freeze-drying and crosslinking.

Accordingly, foam was produced according to Example 3 in experiments conducted on behalf of Appellants. The experimental data is presented in the

Declaration of Kent Malmgren dated April 7, 2006.

Appellants do not assert that *Chen* is specifically limited to the teachings of Example 3. However, the process details found in Example 3 are the only reasonable process details taught to one skilled in the art. Thus, the process details in Example 3 are what one skilled in the art would have been taught with regard to the a) manner, b) timing, c) amounts, d) temperatures, e) concentrations, etc. in conducting the steps upon which the Office relies.

Following the teachings of Example 3, three samples (A, B and C) were produced. Three samples were made to replicate each treatment conducted on three different sections of the foam of Example 3. See *Chen*, column 47, lines 15-17 (1st treatment), lines 26-28 (2nd treatment) and lines 34-37 (3rd treatment).

Thus, one skilled in the art is taught by *Chen* to produce Sample A, B and C with the following absorption properties, as compared with the values recited in claim 1:

Sample	Absorption rate (ml/s)	Liquid distribution capacity (g/g)	Storage capacity (%)	Pore volume distribution (g/g)
A	0.49	8.3	12	2.2
B	0.3	10.8	5	1.6
C	0.2	7.1	3	1.7
CLAIM 1	≥ 0.4	≥ 15	≥ 9	≥ 4

See *Declaration of Kent Malmgren dated April 7, 2006*, paragraph 16.

Following the teachings of *Chen*, one skilled in the art is taught to produce an absorbent material that does **not** have the claimed absorption properties. Therefore, a *prima facie* case of anticipation has been rebutted by evidence showing the *Chen* products do not necessarily possess the characteristics of the claimed absorbent materials.

Accordingly, the teachings of *Chen* do not anticipate the claimed invention.

Moreover, the teachings of *Chen* do not render the claimed invention obvious.

Appellants have achieved the unexpected result of an absorbent material that has the claimed liquid storage rate without sacrificing the claimed absorption rate, liquid storage capacity and pore volume distribution. Moreover, it was unexpected to

be able to obtain the claimed values for absorption rate, liquid distribution capacity and liquid storage capacity while also providing for gel liquid absorption.

The teachings of *Chen* provide no guidance relating to optimization and careful balancing of the process parameters that overcomes these competing properties.

Arriving at the claimed invention is not the result of optimizing traditional result-effective variables. One skilled in the art could not simply optimize one variable (e.g., absorption rate), then hold that variable steady whilst optimizing another variable (e.g., liquid storage capacity). This was not known in the prior art nor taught in *Chen*. Adjusting the process parameters affects both variables. Thus, according to the teachings of the prior art, once the absorption rate is optimized, attempts to change the process parameters to optimize liquid storage capacity will necessarily affect the absorption rate. Thus, in the prior art, only one parameter could be optimized. However, Appellants have unexpectedly discovered a foam that has optimized both absorption rate and liquid storage capacity.

Thus, the variables are not traditional result-effective variables. The variables are interdependent and optimization of absorption rate, liquid distribution capacity and liquid storage capacity is not a simple linear optimization.

Moreover, not only was it unexpected to obtain the claimed absorption rate, liquid distribution capacity and liquid storage capacity, the process parameters have to further provide for an absorbent material with the ability to store the claimed gel liquid.

That is, one skilled in the art reading *Chen* would not have found any discussion or teaching on how to manipulate process parameters to adjust the pore size to get gel liquid storage capabilities while also optimizing three separate properties.

Accordingly, the teachings of *Chen* do not render the claimed invention obvious.

Pore Size

The rejected claims are directed to liquid absorbent materials comprising a pore size distribution between 0 and 3 μm and liquid storage capacity of at least 9% measured through centrifuge retention capacity. An absorbent material with pore sizes in this distribution is able to store liquid in a unique form, i.e., as gel liquid, which is held firmly in the absorbent material. This is a different type of liquid storage than results from capillary pressure which stores capillary liquid in pores of sizes from greater than 3 μm to 500 μm. The gel liquid absorption is a different form of absorption than the loosely bound capillary liquid absorption.

Gel liquid is firmly bound in cells by the swelling cell walls. *See Specification, page 2, lines 29-37.* This liquid is physically distinct from the loosely bound capillary liquid. The physical difference is demonstrated when measuring liquid storage capacity by centrifuge retention capacity, in which saturated foam is centrifuged to remove loosely bound capillary liquid. After centrifuging, primarily gel liquid remains.

Chen does not teach or suggest liquid absorbent materials comprising a pore size distribution between 0 and 3 μm.

Pore Size - No Anticipation

A. *Chen* Does Not Disclose Pore Sizes Smaller than 20 μm

The Office has asserted that a disclosure in *Chen*, at Column 42, lines 31-38, of

> the absolute diameter of the cells defined by the foamable binder material can be about 3 mm [3000 μm] or less; specifically about 1 mm [1000 μm] or less, more specifically about 0.3 mm [300 μm] or less, still more specifically about 0.1 mm [100 μm] or less, and most specifically from about 0.02 mm to about 0.2 mm [20 μm to about 200 μm]

anticipates the claimed range of pore sizes between 0 and 3 μm. Essentially, the Office is asserting that a disclosure of "or less" anticipates all pores sizes down to zero. Appellants respectfully disagree.

A prior art reference must be considered in its entirety, i.e. as a whole. *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983). Appellants contend that the disclosure of *Chen*, when properly considered as a whole, does not anticipate the present claims, specifically the claimed range of pore sizes between 0 and 3 μm.

A disclosure of pore sizes of 3000 μm or less does not teach one skilled in the art a pore size between 0 and 3 μm. The simple inclusion of "or less" does not provide a disclosure of each and every pore size under 3000 μm all the way to zero. Specifically, when read as a whole, it is clear to one skilled in the art that *Chen* does not contemplate a pore size less than 20 μm. This is evident at least from the description cited above from Column 42, lines 31-38, and because there is no other discussion of a pore size smaller than 20 μm. *Chen* is deficient of a teaching of a pore size less than 20 μm.

Moreover, the remaining disclosure of *Chen* is deficient of an indirect teaching of a pore size less than 20 μm. No other discussion in *Chen* demonstrates a teaching of material with a pore size between 0 and 3 μm. Examples 1-6 in *Chen*, at Columns 43-48, do not disclose a pore size between 0 and 3 μm. Producing a foam material with properties according to the present claims is difficult. This is especially true with the *fibrous* material of *Chen.* None of the Examples in *Chen* teach methods that would appear to overcome these difficulties in order to produce a material having pore sizes between 0 and 3 μm.

As stated above, with a pore size distribution between 0 and 3 μm, the presently claimed absorbent material is able to store gel liquid. *Chen* does not recognize or suggest gel liquid storage or any such manner of storage. Instead, with regard to foam absorption, *Chen* is focused simply on capillary absorption.

An absorbent material may have a distribution of its absorption capacity in two different forms, capillary liquid and gel liquid. Gel liquid refers to liquid held in pores smaller than 3 μm and capillary liquid refers to loosely bound liquid in pores larger than 3 μm and up to 500 μm. Gel liquid is the liquid that is held most firmly in the structure.

The absorbent structure taught in *Chen* has low capillary absorption and the *Chen* teachings are focused simply on improving the capillary absorption. *Chen* is focused on a primarily fibrous absorbent structure in contrast to fiber-reinforced foams. *Chen*, Column 1, lines 63-65. The resulting large fibrous structure pore sizes (500 – 7,000 μm)[1] offer relatively little capillary pressure. *Chen*, Column 42,

1 Fibrous pore sizes are on order of the fiber length. See Column 46, lines 21-25. Average fiber length is 0.5 – 7 mm, which is 500 – 7,000 μm. Column 7, lines 47-54.

lines 12-16. To remedy the low capillary pressure of the fibrous structure, *Chen* discloses the use of foamable binder in a manner to also increase capillary pressure, thereby increasing capillary absorption. Thus, *Chen* is focused on using foamable binder for the purpose of simply storing capillary liquid. *Chen* does not suggest any other absorption function for the foamable binder.

Additionally, *Chen* does not teach or suggest gel liquid absorption. Therefore, with no teaching of the necessary pore sizes or of any gel liquid absorption, *Chen* clearly does not teach or suggest gel liquid absorption of at least 4 g/g.

Thus, *Chen* does not teach every element of the claimed invention. Claims 1-2, 4-13, 15 and 20 are, thus, not anticipated by *Chen.*

B. The Claimed Range Is Not Disclosed in *Chen* With Sufficient Specificity

An interpretation of the disclosure of *Chen*, specifically the "less than" language, as resulting in a disclosure of pore sizes all the way to zero still does not result in anticipation of the claimed invention because the claimed range of pore sizes between 0 and 3 μm is not disclosed with sufficient specificity.

Because the claims are directed towards a narrow range, the claimed range must be disclosed in *Chen* with "sufficient specificity" to constitute an anticipation of the claims. See MPEP § 2131.03. Stated another way, one of skill in the art is not able to "at once envisage" the claimed range of pore sizes between 0 and 3 μm from the disclosure of *Chen*. That is, the present claims are directed to a narrow range (pore sizes of 0-3 μm), the reference teaches a broad range (pore sizes of 3000 μm or less), and the presently claimed range is a critical range (capability to store gel liquid). Based on the above discussion, Appellants assert that the narrowly claimed range is not disclosed with sufficient specificity in *Chen* to constitute an anticipation of the claimed range.

A disclosure of pore sizes of 3000 μm or less does not disclose with sufficient specificity a pore size between 0 and 3 μm. The simple inclusion of "or less" does not provide a specific disclosure of each and every pore size under 3000 μm all the way to zero. Further, the disclosure of a preferred range of 20 μm to 200 μm does not provide any specificity for the narrow range of pore sizes between 0 and 3 μm.

Moreover, the insufficiency of 3000 μm or less is not remedied by the

remaining disclosure of *Chen*. No other discussion in *Chen* demonstrates with any specificity, let alone sufficient specificity, a pore size between 0 and 3 μm. Examples 1-6 in *Chen*, at Columns 43-48, do not disclose with sufficient specificity a pore size between 0 and 3 μm, as none of the Examples in *Chen* teach methods that would appear to produce a material having pore sizes between 0 and 3 μm.

As stated above, with a pore size distribution between 0 and 3 μm, the presently claimed absorbent material is able to store gel liquid. *Chen* does not recognize or suggest gel liquid storage or any such manner of storage. Instead, with regard to foam absorption, *Chen* is focused simply on capillary absorption. No gel liquid absorption, and therefore pore sizes between 0 and 3 μm, is disclosed with sufficient specificity.

Thus, because the claimed range is not disclosed with sufficient specificity in *Chen*, the present claims are not anticipated.

C. Anticipation Conclusion - Pore Size

Chen does not teach liquid absorbent materials comprising a pore size distribution between 0 and 3 μm.

Thus, *Chen* does not teach every element of the claimed invention. Claims 1-2, 4-13, 15 and 20 are, thus, not anticipated by *Chen.*

Pore Size - Nonobivousness

A. Claims Encompass a Critical Range

As detailed above, *Chen* does not anticipate the claimed invention. Moreover, *Chen* does not render the claimed invention obvious. Any alleged *prima facie* case of obviousness is rebutted because of the criticality of the claimed range.

A *prima facie* case of obviousness based on overlapping ranges can be rebutted by showing criticality of the claimed range. See *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

The claimed range of pore sizes between 0 and 3 μm is a critical range. The range of pore sizes between 0 and 3 μm is a critical range because pores of only about that size are able to store liquid in a unique form, gel liquid. See the *Declaration of Kent Malmgren dated May 19, 2004*, Paragraph 5. Gel liquid is held

firmly in the absorbent material of the present claims. All other pores of sizes greater than about 3 μm hold, at best, capillary liquid. Capillary liquid absorption is a different form of absorption that is more loosely bound than gel liquid.

Gel liquid is a liquid that is in a different form of storage from capillary liquid. Gel liquid is firmly bound in cells by the swelling cell walls. *See Specification, page 2, lines 29-37.* This liquid is physically distinct from the loosely bound capillary liquid. The physical difference is demonstrated when measuring liquid storage capacity by centrifuge retention capacity, in which saturated foam is centrifuged to remove loosely bound capillary liquid. After centrifuging, primarily gel liquid remains.

Pore Size	**Between 0 and 3 μm**	**> 3 μm**
Liquid Storage	Gel Liquid NO Capillary Liquid	NO Gel Liquid Capillary Liquid

Thus, the claimed range compared with the range disclosed in the prior art shows a "marked improvement," so as to be a difference in kind, rather than one of degree. The "marked improvement" is the capability to store gel liquid, a capability which is absent from prior art ranges. Therefore the claimed range of pore sizes between 0 and 3 μm is a critical range and no case of prima facie obviousness exists.

In view thereof, *Chen* does not render the claimed invention obvious.

B. No Motivation To Modify *Chen*

As discussed above, the disclosure of *Chen* does not teach the present claims, specifically the claim limitation that the absorbent material comprises pores with sizes between 0 and 3 μm. There is nothing in *Chen* that would have motivated persons skilled in the art to modify the disclosed pore sizes of *Chen* in a manner to arrive at the presently claimed range. The disclosure of "or less" would not have motivated persons skilled in the art to incorporate pores of a size between 0 and 3 μm. The disclosure of pore sizes of 20 μm to 200 μm provides no motivation for one skilled in the art to modify the pores to sizes below 20 μm, let alone down to the claimed range of pore sizes between 0 and 3 μm.

Moreover, the unique manner of storing liquid, gel liquid, which can be accomplished at this pore size, is not obvious based on the disclosure of *Chen*.

Chen is focused on a primarily fibrous absorbent structure in contrast to fiber-reinforced foams. *Chen,* Column 1, lines 63-65. The resulting large fibrous structure pore sizes (500 – 7,000 μm) offer relatively little capillary pressure. *Chen,* Column 42, lines 12-16. To remedy the low capillary pressure of the fibrous structure, *Chen* discloses the use of foamable binder in a manner to also increase capillary pressure, thereby increasing capillary absorption. Thus, *Chen* is focused on using foamable binder for the purpose of simply storing capillary liquid. *Chen* does not suggest any other absorption function for the foamable binder. Therefore, based on the disclosure of *Chen*, one skilled in the art would not be motivated to incorporate gel liquid storage, or the accompanying pore size between 0 and 3 μm, in an absorbent material.

Moreover, no discussion in *Chen* suggests or provides motivation to modify *Chen* to reach a pore size between 0 and 3 μm. The Examples in *Chen*, at Columns 43-48, do not suggest a pore size between 0 and 3 μm and none of the Examples in *Chen* suggest methods that would appear to overcome these difficulties in order to produce a material having pore sizes between 0 and 3 μm.

Therefore, *Chen* would not have made the claimed invention, as defined in the rejected claims, obvious since there is no motivation or suggestion provided to prepare a material with cells or pores of sizes between 0 and 3 μm.

C. Nonobivousness Conclusion - Pore Size

Chen does not teach or suggest liquid absorbent materials comprising a pore size distribution between 0 and 3 μm. Further, one skilled in the art would not have been motivated by *Chen* to modify an absorbent material to comprise a pore size distribution of between 0 and 3 μm.

Thus, Claims 1-2, 4-13, 15 and 20 are, thus, not rendered obvious by *Chen.*

Gel Liquid

According to the specification, "Gel liquid refers to liquid held in pores smaller than 3 μm and capillary liquid refers to loosely bound liquid in pores larger than 3 μm and up to 500 μm." Specification, page 5, lines 19-20.

According to the Office, *Chen* anticipates pores sizes of smaller than 3 μm. Thus, the Office asserts that the absorbent material taught by *Chen* is inherently

capable of absorbing both capillary and gel liquid.

But, as explained above, *Chen* does not teach or suggest a pore size distribution of between 0 and 3 μm. Accordingly, the inherency argument is fatally flawed. Because *Chen* does not teach a pore size distribution of between 0 and 3 μm while gel liquid refers to liquid held in pores smaller than 3 μm, Chen does not inherently teach the ability to store gel liquid.

Moreover, the fact that a certain result or characteristic may occur or be present in *Chen* is not sufficient to establish inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993). That is, "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (citations omitted).

In fact, *Chen* is focused on using foamable binder simply for storing capillary liquid. *Chen* is focused on a primarily fibrous absorbent structure with relatively little capillary pressure. To remedy the low capillary pressure of the fibrous structure, *Chen* discloses the use of foamable binder in a manner to also increase capillary pressure, thereby increasing capillary absorption. Thus, *Chen* is focused on using foamable binder for the purpose of simply storing capillary liquid. *Chen* does not suggest any other absorption function for the foamable binder. Therefore, the disclosure of *Chen*, provides no motivation for one skilled in the art to modify Chen to incorporate gel liquid storage, or the accompanying pore size between 0 and 3 μm, in an absorbent material.

Thus, gel liquid storage is not inherent in *Chen*.

CONCLUSION

Section 103 requires assessment of the invention as a whole. *Princeton Biochemicals, Inc. v. Beckman Coutler, Inc.*, 411 F.3d 1332, 1337 (Fed. Cir. 2005).

> This 'as a whole' assessment of the invention requires a showing that an artisan of ordinary skill in the art at the time of invention, ***confronted by the same problems as the inventor*** and with no knowledge of the claimed invention, would have selected the various

elements from the prior art and combined them in the claimed manner. *Id* (emphasis added).

That is, the problem confronting the Appellants was to optimization of three separate properties, absorption rate, liquid distribution capacity, and liquid storage capacity, while producing a composition with the ability to store gel liquid.

The Office is ignoring the problems confronting one skilled in the art whom, with no knowledge of the claimed invention, would have dismissed the selected various teachings of *Chen* as trending towards remedying the low capillary pressure of the fibrous structure. *Chen* teaches using an open cell foam binder in a manner to increase capillary pressure, thereby increasing capillary absorption. There is no motivation to rely on the teachings of *Chen* to arrive at the presently claimed invention, especially considering that optimization of absorption rate, liquid distribution capacity, and liquid storage capacity is not a simple linear optimization but requires a careful balancing between competing factors. The Office is not properly considering the invention as a whole, as analysis under section 103 requires.

Thus, the Office has improperly applied a hindsight reconstruction to arrive at the presently claimed invention. The Office's improper reconstruction alleges that the gel liquid absorption is inherent to *Chen* and that absorption rate, liquid distribution capacity, and liquid storage capacity can simply be optimized by one skilled in the art. However, this ignores the fact that the gel liquid is not intrinsic to *Chen* and that that optimization of absorption rate, liquid distribution capacity, and liquid storage capacity is not a simple linear optimization but requires a careful balancing between competing factors.

According to the Federal Circuit, "a retrospective view of inherency is not a substitute for some teaching or suggestion which supports the selection and use of the various elements in the particular claimed combination." *In re Newell*, 13 USPQ2d 148, 1250 (Fed. Cir. 1989). The retrospective view of the inherency/intrinsic nature is an inadequate ground upon which to reject the claimed invention.

Appellants' claimed methods do *not* flow logically from the teachings of the *Chen* and Appellants' invention as a whole is *not* obvious in light of *Chen*. Appellants perceive no motivation in *Chen* to arrive at gel liquid absorption.

Chen and Appellants' invention as a whole is *not* obvious in light of *Chen*. Appellants perceive no motivation in *Chen* to arrive at gel liquid absorption. Appellants also perceive no basis for a reasonable expectation of success if isolated aspects of *Chen* were used in the manner suggested by the Office without the benefit of impermissible hindsight afforded by the teachings of Appellants' disclosure.

Accordingly, claims 1-2, 4-13, 15 and 20 are, thus, not anticipated or rendered obvious by *Chen*.

Accordingly, one skilled in the art would *not* have been motivated to arrive at the presently claimed invention by modifying *Chen*.

Accordingly, the Office has not presented a proper obviousness rejection.

Accordingly, appellant respectfully requests that the rejection of claims 1, 2, 4-13, 15 and 20 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over *Chen*, be withdrawn.

Appellants believe all matters raised in the above referenced Office Action have been responded to and that the application is now in condition for allowance.

Should the Office have any questions regarding this Amendment, or regarding the application in general, the Office is invited to contact the undersigned at the number listed below in order to expedite prosecution of the application.

Respectfully submitted,
Buchanan Ingersoll & Rooney PC

Date January 29, 2007

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VIII. CLAIMS APPENDIX

The Appealed Claims

1. (Previously presented) A liquid absorbent material comprising an open-cell polymeric foam material comprising either polysaccharide or polypeptide, the foam material comprising a distribution of pore sizes between 0 and 3 μm, the foam material having an absorption rate at wetting of at least 0.4 ml/s for a round sample having a 50 mm diameter, a liquid distribution capacity at an inclination of 30° of at least 15 g/g, a liquid storage capacity of at least 9% measured through centrifuge retention capacity and a gel liquid absorption of at least 4 g/g measured by pore volume distribution, for synthetic urine test liquid.

2. (Previously presented) A liquid absorbent material as claimed in claim 1, wherein the absorption rate at wetting is at least 0.5 ml/s, the liquid distribution capacity at an inclination of 30° is at least 16 g/g, and the liquid storage capacity measured through centrifuge retention capacity is at least 11%.

3. (Canceled)

4. (Previously presented) A liquid absorbent material as claimed in claim 1, wherein the foam material contains fibers in its pore system.

5. (Previously presented) An absorbent structure in an absorbent article, wherein the absorbent structure comprises a liquid absorbent material according to claim 1.

6. (Previously presented) An absorbent structure as claimed in claim 5, wherein said absorbent structure is comprised solely of said foam material.

7. (Previously presented) An absorbent structure as claimed in claim 5, wherein the foam material has a three-dimensional anatomic shape.

8. (Previously presented) A liquid absorbent material as set forth in claim 1, wherein the liquid absorbent material is used in an absorbent structure in an

absorbent article and the absorbent article is a diaper, a pant diaper, a sanitary napkin, an incontinence guard, a wound dressing, or a bed protection.

9. (Previously presented) An absorbent structure in an absorbent article as claimed in claim 5, wherein the absorbent article is a diaper, a pant diaper, a sanitary napkin, an incontinence guard, a wound dressing, or a bed protection.

10. (Previously presented) A liquid absorbent material as claimed in claim 20, wherein the gel liquid absorption is at least 5 g/g synthetic urine.

11. (Previously presented) A liquid absorbent material as claimed in claim 20, wherein the capillary liquid absorption is at least 10 ml/g synthetic urine.

12. (Previously presented) A liquid absorbent material as claimed in claim 20, wherein the gel liquid absorption is at least 5 g/g synthetic urine and the capillary liquid absorption is at least 10 ml/g synthetic urine.

13. (Previously presented) A liquid absorbent material comprising an open-cell polymeric foam material comprising either polysaccharide or polypeptide, the foam material having a first distribution of pore sizes between 0 and 3 µm and a second distribution of pore sizes between 3 and 100 µm, the foam material having an absorption rate at wetting of at least 0.4 ml/s for a round sample having a 50 mm diameter, a liquid distribution capacity at an inclination of 30° of at least 15 g/g, a liquid storage capacity of at least 9% measured through centrifuge retention capacity and a gel liquid absorption of at least 4 g/g measured by pore volume distribution, for synthetic urine test liquid.

14. (Canceled)

15. (Previously presented) A liquid absorbent material comprising an open-cell polymeric foam material comprising either polysaccharide or polypeptide, the foam material having a first distribution of pore sizes between 0 and 3 µm and a second distribution of pore sizes between 3 and 500 µm, the foam material having an

absorption rate at wetting of at least 0.4 ml/s for a round sample having a 50 mm diameter, a liquid distribution capacity at an inclination of 30° of at least 15 g/g, a liquid storage capacity of at least 9% measured through centrifuge retention capacity and a gel liquid absorption of at least 4 g/g measured by pore volume distribution, for synthetic urine test liquid.

16. – 19. (Canceled)

20. (Previously presented) A liquid absorbent material comprising an open-cell polymeric foam material comprising either polysaccharide or polypeptide, the foam material having an absorption rate at wetting of at least 0.4 ml/s for a round sample having a 50 mm diameter, a liquid distribution capacity at an inclination of 30° of at least 15 g/g, a liquid storage capacity of at least 9% measured through centrifuge retention capacity, for synthetic urine test liquid, a first distribution of pores with a diameter less than 3 μm which produces a gel liquid absorption of at least 4 g/g synthetic urine, and a second distribution of pores with a diameter between 3 and 100 μm which produces a capillary liquid absorption of at least 8 ml/g.

IX. EVIDENCE APPENDIX

Declaration of Kent Malmgren dated April 7, 2006
Declaration of Kent Malmgren dated May 19, 2004

Patent
Attorney's Docket No. 1010315-000092

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Kent Malmgren et al.

Application No.: 09/651,130

Filed: August 3, 2000

For: Absorbent Foam Material, a Method of Producing It and an Absorbent Structure Containing Said Foam Material

Group Art Unit: 1771

Examiner: Victor S. Chang

Confirmation No.: 1064

DECLARATION OF KENT MALMGREN

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Kent Malmgren, hereby state as follows:

1. I am one of the inventors of the subject matter disclosed and claimed in the above-referenced patent application. My education is Master of Science in Chemical Engineering from the Royal Institute of Technology, Stockholm, Sweden, and I am employed by SCA since 1986. I have mainly been active in research work and my position is research leader in the fiber chemistry area.

2. I have reviewed and am familiar with U.S. Patent No. 6,261,679 of Chen et al. issued July 17, 2001, to Kimberly-Clark Worldwide, Inc. ("Chen").

3. In and around January to March 2006 I conducted experiments to prepare and test materials according to Example 3 of Chen.

Sample Preparation

4. In order to replicate the absorbent material of Example 3 of Chen, carboxymethyl cellulose ("CMC") with the trade name Blanose 74HC, produced by Hercules Inc., was used in these experiments. This CMC grade has an average molecular weight greater than 1000000 and should, according

to the supplier, be equal to the grade named CMC-TH, which was used in Example 3 in Chen. Eucalyptus fibers were obtained from the Votorantim, Celulose e Papel Company, Brazil and these fibers showed a Canadian Standard Freeness of 570 ml. The pulp was disintegrated according to standard procedures, SCAN method No. C18:65, and then dewatered on a büchner funnel.

5. The consistency of the dewatered pulp was measured and an amount corresponding to 20 grams dry pulp was added to a solution of CMC in distilled water. The mixture, which contained 1.25 g CMC, 20 g eucalyptus fibers and 1000 g distilled water, was then agitated in a Hobart mixer for 2 h at 23°C. The agitated mixture was transferred to a pan and cooled down to about 20°C in a Tefcold freezer, type TFF370. The amount of mixture/ pan area was the same as in Chen, i.e. about 0.78 g/cm2. The frozen material was then transferred to an Edwards Modulyo freeze dryer. After freeze-drying, the dry sheet was inspected and it appeared to have low density and high porosity.

6. The freeze-dried material was heat treated at 130°C in a Heraues oven, type T6120, for 2 h. As in Example 3 of Chen, one section of the material was then further treated at 180°C for 10 minutes. Another section was sprayed on both sides with a Kymene 217 LX solution having 1.1 % solids. Kymene 217 LX is a polyaminoamide-epichlorohydrine resin produced by Hercules Inc. and should, according to the supplier, be equal to Kymene 557-LX, which was used in Chen. The sample had a dry weight of 6.1 g and was sprayed with 30 g of the Kymene solution (15 g on each side). The sprayed sample was then dried and heat-treated in an oven at 105°C for 25 min.

Prepared samples

7. Three absorbent materials according to Example 3 of Chen where prepared:

A. Treated at 130°C for 2 h

B. Treated at 130°C for 2h and 180°C for 10 min.

C. Treated at 130°C for 2h and sprayed with Kymene solution.

Measuring methods

8. The prepared samples were examined with two methods described in Chen, Absorption under load (AUL) and Free Swell Capacity. As prescribed in Chen, the test liquid was 0.9 % saline solution.

9. The samples were also tested with the methods used in the present patent application: Absorption rate, Liquid distribution capacity, Storage capacity and Pore volume distribution.

10. Absorption rate was measured as described on page 6, line 15, to page 7, line 23, of the present application.

11. Liquid distribution capacity was measured as described on page 7, line 24, to page 8, line 17, of the present application.

12. Storage capacity was measured as described on page 8, lines 19-27, of the present application.

13. Pore volume distribution was measured as described on page 14, lines 19-26, of the present application.

14. In the tests according to the present application, synthetic urine was used. The synthetic urine was made according to the recipe of 0.66 g/l $MgSO_4$, 4.47 KCl, 7.6 g/l NaCl, 18.00 g/l NH_2CONH_2 (urea), 3.54 g/l KH2PO4, 0.754 g/l Na_2HPO_4, 1 ml/l of a 0.1% solution of Triton X-100, which is a surfactant sold by Aldrich. The substances were dissolved in deionized water.

Results

15. Results of the sample materials prepared according to Example 3 of Chen measured according to the two methods described in Chen are as follows:

Sample	Absorption under load (g/g)	Free Swell Capacity (UNITS)
A	11.7	22.5
B	13.8	23.9
C	13.9	18.7

16. Results of the sample materials prepared according to Example 3 of Chen measured according to the methods used in the present patent application are as follows:

Sample	Absorption rate (ml/s)	Liquid distribution capacity (g/g)	Storage capacity (%)	Pore volume distribution (g/g)
A	0.49	8.3	12	2.2
B	0.3	10.8	5	1.6
C	0.2	7.1	3	1.7

17. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 81 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name: Kent Malmgren Date: 2006-04-07

Kent Malmgren

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Kent Malmgren et al.

Application No.: 09/651,130

Filed: August 3, 2000

For: Absorbent Foam Material, a Method of Producing It and an Absorbent Structure Containing Said Foam Material

Group Art Unit: 1771

Examiner: Victor S. Chang

Confirmation No.: 1064

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Kent Malmgren, hereby state as follows:

1. I am one of the inventors of the subject matter disclosed and claimed in the above-referenced patent application. My education is Master of Science in Chemical Engineering from The Royal Institute of Technology, Stockholm, Sweden, and I am employed by SCA since 1986. I have mainly been active in research work and my position is research leader in the fiber chemistry area.

2. I have reviewed and am familiar with U.S. Patent No. 6,261,679, issued July 17, 2001, to Kimberly-Clark Worldwide, Inc.

3. The liquid absorbent material as defined in the rejected claims comprises an open-cell polymeric foam material. This material is suitable for use as an absorbent structure in absorbent articles. The foam material of the liquid absorbent material has an absorption rate at wetting of at least 0.4 ml/s for a round sample having a 50 mm diameter, a liquid distribution capacity at an inclination of 30° of at least 15 g/g and a liquid storage capacity of at least 9% measured through centrifuge retention capacity, for synthetic urine test liquid.

4. As described in the present application, a foam is built of a continuous three-dimensional network or cellular structure of a solid or liquid phase, which surrounds a gaseous phase dispersed therein. The liquid absorbent materials as defined in the claims comprise an open-cell polymeric foam material which liquid absorbent materials may have multifunctional absorption properties with respect to liquid acquisition capacity, distribution capacity and storage capacity. Thus, the material may simultaneously fulfill the functions of a liquid acquisition layer, distribution layer and storage layer. *Specification, pages 4-5.*

5. As further described in the application, gel liquid refers to liquid held in pores smaller than 3 µm and capillary liquid refers to loosely bound liquid in pores larger than 3 µm and up to 500 µm. Gel liquid is the liquid that is held most firmly in the structure. *Specification, page 5.* The liquid storage capacity of the foam defined in the claims may be measured by centrifuge retention capacity (CRC), which is a measure of the capacity of the foam to firmly bind gel liquid in its solid phase by swelling the cell walls. *Specification, page 2, page 8.*

6. Upon information and belief, Chen et al., U.S. Patent No. 6,261,679, describes a fibrous material, wherein a foam forming material has been added to the fibrous material to keep the fibers apart and to create an expanded and highly porous fiber structure. The Chen et al. material is defined in embodiments as a "foam-reinforced fibrous network" wherein the components of the structuring composition or foam play a relatively minor structural role in the final absorbent material, once the fibers have been properly positioned and bound. *Column 1, line 50 – column 2, line 4.* In Chen et al., the fibers form the walls in the cellular structure, thus having an open-cell foam characteristic. *See, Figures 1 and 2.*

7. Figure 4 of Chen et al. depicts an embodiment based on Figure 2 of Chen et al. in which the foam that served to structure the fibers has not collapsed, but remains partly intact as a structural component of the absorbent fibrous structure, occupying a significant portion of the void space in the cells defined by the fibers in fibrous struts. As described in Chen et al., the cells defined by the foamable binder may have a diameter from about 0.02

mm to about 0.2 mm (20 to 200 µm). *Column 41, line 55 – column 42, line 38.*

8. Upon information and belief, the liquid absorbent materials as defined in the claims of the present application are substantially different than those disclosed by Chen et al. and have different properties. The liquid storage capacity measured through centrifuge retention capacity will be significantly lower in the fiber structure disclosed by Chen et al. since the CRC method mainly measures the so-called "gel liquid", which is liquid that is firmly bound in pores smaller than 3 µm. A fibrous network of the kind shown in Chen et al., for example in Figure 2, will have a considerably lower CRC value than claimed since Chen et al. does not disclose that a part of the cells of the fiber structure described would have a size small enough to give a liquid storage capacity as claimed. The pore size of the material disclosed in Chen et al. would not provide the claimed liquid storage capacity as there is no description of the material in Chen et al. having pores of a size in which gel liquid would be bound such that the claimed liquid storage capacity may be achieved. Thus, the material of Chen et al. is different from the liquid absorbent material defined in the claims of the present application.

9. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 81 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name: Kent Malmgren Date: 2004-05-19
Kent Malmgren

X. RELATED PROCEEDINGS APPENDIX

Attached papers relating to Appeal No. 2006-0784:

Appeal Brief filed on August 31, 2005,

Examiner's Answer mailed on October 6, 2005; and

Reply Brief filed on December 6, 2005.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/651,130	08/30/2000	Kent Malmgren	010315-092	1064

21839 7590 10/06/2005

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EXAMINER	
CHANG, VICTOR S	
ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

URGENT

PTO-90C (Rev. 10/03)

Req Oral Hearing 12-6-05
Reply Brief Due 12-6-05

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/651,130
Filing Date: August 30, 2000
Appellant(s): MALMGREN ET AL.

Travis D. Boone
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/31/2005 appealing from the Office action mailed 4/8/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 6,261,679 Chen et al. 7-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 2, 4-15 and 20 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chen et al. (US 6261679).

Chen's invention is directed to an open-cell fibrous absorbent structure for use as absorbent articles such as feminine care pads, diapers, incontinence articles, bed pads and bandages for the intake, distribution, and retention of human body fluids (column 2, lines 5-49). Hydrophilic fibers can be any known cellulosic fibers, such as fibers derived from chitin, chitosan, starch, or other polysaccharides can also be used (column 7, lines 35-55). The polymeric binder material in the structuring composition may be rendered foamable at least in part due to the presence of foaming agents such as a surfactant by mechanical agitation (column 11, line 47 to column 12, line 5). Suitable swellable binder materials include polysaccharides such as carboxymethyl celluloses, etc., and synthetic polypeptides such as polyaspartic acid, etc. (column 12, line 31-45).

For claims 1, 2-6, 8 and 9, Chen is silent about a distribution of pore sizes between 0 and 3 μm in the absorbent structure and its the absorption rate, liquid distribution capacity, and liquid storage capacity under certain specific testing conditions. However, Chen does teach that the cells defined by the foamable binder material can be about 3 mm or less; specifically about 1 mm or less, more specifically about 0.3 mm or less, still more specifically about 0.1 mm or less, and most specifically from about 0.02 mm to about 0.2 mm (column 42, lines 33-38), which reads on the pore size (a distribution of pore sizes between 0 and 3 μm) as claimed. Further, Chen also expressly teaches essentially the same process of making the absorbent structure by a) mixing fibers and binder resins (column 11, lines 47-55; and column 21, lie 43 to column

22, line 25), b) foaming by gas injection or mechanical agitation (column 16, lines 10-24), c) optionally incorporating a crosslinking agent (column 29, line 20 to column 31, line 34), d) molding foamed mixture (column 26, lines 13-23), and e) freeze drying (column 17, line 66 to column 18, line 39) as the instant invention (see specification, pages 9 and 10). As such, it is the Examiner's position that, in the absence of evidence to the contrary, since Chen teaches substantially the same subject matter (an absorbent structure), made of the same composition (a mixture of the same hydrophilic fiber and binder materials, as set forth above), and also by the same process, a suitable pore size in the absorbent structure and its absorbent properties (absorption rate, liquid distribution capacity, and liquid storage capacity) are either anticipated by Chen, or are obviously provided by practicing the invention of the prior art. It should be noted that where the claimed and prior art products are shown to be identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. See MPEP § 2112.01.

For claim 7, Chen teaches that the absorbent structure may be used as diapers, incontinence articles, etc., as set forth above, which are inherently shaped to fit a wearer's three-dimensional body anatomy.

For claims 13 and 14, the Examiner notes that Chen's teaching of the cells defined by the foamable binder material being about 3 mm or less; specifically about 1 mm or less, more specifically about 0.3 mm or less, still more specifically about 0.1 mm

or less, as set forth above, read on both distributions of pore sizes of instant inventions as claimed.

For claims 10-12 and 20, the Examiner notes that since the specification merely defines the terms "gel liquid" and "capillary liquid" as "Gel liquid refers to liquid held in pores smaller than 3 μm and capillary liquid refers to loosely bound liquid in pores larger than 3 μm and up to 500 μm" (specification, page 5, second paragraph from the bottom), they merely appear to be liquids of the same composition being absorbed in pores of different ranges of sizes. A such, since Chen does teach substantially the same subject matter of the same structure and composition, including desirable pore sizes as claimed, as set forth above, it is the Examiner's position that, in the absence of evidence to the contrary, the ability of "gel liquid" storage also appears to be either inherent, or obviously provided by practicing the prior art, and these claims are also rejected under the same reasoning as set forth above. Further, it should be noted that "gel liquid" storage appears to be a latent property of Chen's invention, and mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention. MPEP § 2145.II.

(10) Response to Argument

With respect to Appellants' argument "A disclosure of pore sizes of 3000 μm or less does not teach one skilled in the art a pore size between 0 and 3 μm. The simple inclusion of "or less" does not provide a disclosure of each and every pore size under 3000 μm all the way to zero. Specifically, when read as a whole, it is clear to one skilled in the art that *Chen et al.* does not contemplate a pore size less than 20 μm. This is

evidenced at least by the description cited ... from Column 42, lines 31-38, and because there is no other discussion of a pore size smaller than 20 μm. Chen et al. is deficient of a teaching of a pore size less than 20 μm" (Appeal Brief, pages 4-5, bridging paragraph), the Examiner asserts that while Chen is silent about a distribution of pore size between 0 and 3 μm, Chen does expressly teach that progressively smaller pores are desirable. Given this proclivity towards smaller and smaller pore sizes in combination with the fact that Chen teaches substantially the same subject matter (an absorbent structure), made of the same composition (a mixture of the same hydrophilic fiber and binder materials, as set forth above), and also by the same process, it is expected that a suitable range of smaller pore sizes in the absorbent structure and its absorbent properties (absorption rate, liquid distribution capacity, and liquid storage capacity) are either anticipated by Chen, or are obviously provided by practicing the invention of the prior art. In particular, the Examiner notes that the end point of 0 μm of instantly claimed limitation *inherently* reads on the *un-voided portion* of Chen's swellable foamed binder as claimed, such as the portion which forms the swellable cell walls. Further, it should also be noted Chen's disclosure of "most specifically from about 0.02 mm to about 0.2 mm" is clearly directed to a preferable or most populous range of pore sizes among all the pores formed, nowhere does Chen state that such a range is limiting. Appellants' argument is not found convincing for these reasons and especially in the absence of any criticality being expressed for the claimed range.

With respect to Appellants' argument "with a pore size distribution between 0 and 3 μm, the presently claimed absorbent material is able to store gel liquid. *Chen et al.*

does not recognize or suggest gel liquid storage or any such manner storage. Instead, with regard to foam absorption, *Chen et al.* is focused on capillary absorption" (Appeal Brief, page 5, second full paragraph), the Examiner repeats that since the specification merely defines "gel liquid" and "capillary liquid" as liquids of the same composition being absorbed in pores of different ranges of sizes, the Office fails to recognize any material difference between the two and hold that any difference is merely semantics, not chemistry. In other words, while Chen is silent about "gel liquid" storage, since Chen does teach substantially the same subject matter of the same structure and composition, including desirable pore sizes as claimed, as set forth above, it is the Examiner's position that the ability of "gel liquid" storage appears to be inherent. It should be noted that mere recognition of undocumented properties in the prior art does not render nonobvious an otherwise known invention. MPEP § 2145.II.

With respect to Appellants' argument "the present claims not only define that pores smaller than 3 μm are present in the foam, but it is also defined that there is a certain minimum amount of the pores that have a cell diameter of 3 μm or less. This is because the present claims recite a liquid storage capacity of at least 9% measured through centrifuge retention capacity. Centrifuge retention capacity is a measure of the relative amount of absorbed liquid (measured by free swell capacity) that is held firmly in the foam structure in pores of a size up to 3 μm and is not released upon centrifugation" (Appeal Brief, page 6, first full paragraph) gas been carefully considered, but is not persuasive, the examiner repeats that since Chen does expressly teach that progressively smaller pores are desirable, and Chen teaches substantially the same

subject matter (an absorbent structure), made of the same composition (a mixture of the same hydrophilic fiber and binder materials, as set forth above), and also by the same process, a suitable range of smaller pore sizes in the absorbent structure and its corresponding "gel liquid" storage capacity are either anticipated by Chen, or are obviously provided by practicing the invention of the prior art.

Referring to the Declaration of Kent Malmgren, Appellants' argument "the claimed range compared with the range disclosed in the prior art shows a "marked improvement", so as to be a difference in kind, rather than one of degree. The "marked improvement" is the capability to store gel liquid, a capability which is absent from prior art ranges. Therefore the claimed range of pore sizes between 0 and 3 μm is a critical range and no case of prima facie obviousness exists" (Appeal Brief, pages 7-8, bridging paragraph) has been carefully considered, but is not persuasive. First, the Examiner notes that nowhere in the Declaration of Malmgren has a factual support of "marked improvement" been provided. Further, it is not clear if "marked improvement", if it exists, is sufficient to distinguish over the language of the claims. Absent an actual comparison, the Declaration is at best inconclusive of non-obviousness. Second, in the Declaration, point 5, Malmgren appears to have confused about the exact definition of "gel liquid". In one sentence, Malmgren states that "gel liquid refers to liquid held in pores smaller than 3 μm and capillary liquid refers to loosely bound liquid in pores larger than 3 μm and up to 500 μm", which is commensurate with the specification (see specification, page 5, second paragraph from the bottom). In another sentence, Malmgren states that "The liquid storage capacity of the foam defined in the claims may

be measured by centrifuge retention capacity (CRC), which is a measure of the capacity of the foam to firmly bind gel liquid in its solid phase by swelling the cell walls. *Specification, page 2, page 8.*" The Examiner notes that the definition provided on page 2 is disclosed in the section of "Background of the Invention", and it is clearly incommensurate with the definition disclosed in the section of "Description of Embodiments" at page 5. Page 8 merely described how CRC is measured. Since the definition in the section of "Description of Embodiments" at page 5 is relied upon, the definition at page 2 for prior art is not considered. Third, even if the definition at page 2 is considered, the Examiner would like to point out that Chen does teach the use of swellable binder material, and it would have been obvious to one of ordinary skill in the art to incorporate suitable amount of swellable binder material in the absorbent structure, motivated by the desire to obtain an improved absorbent material. Lastly, while Mr. Malmgren may be an expert in the art, the statements made are clearly only that based on opinion and not from a disinterested part. Therefore, it is not seen that the Declaration deserves persuasive weight.

With respect to Appellants' argument "the disclosure of *Chen et al.*, specifically the "less than" language ... does not result in anticipation of the claimed invention because the claimed range of pore sizes between 0 and 3 μm is not disclosed with sufficient specificity" (Appeal Brief, page 8, first full paragraph), the Examiner repeats that the end point of 0 μm of instantly claimed limitation *inherently* reads on the *un-voided portion* of Chen's swellable foamed binder as claimed, such as the portion which forms the swellable cell walls. Further, the Examiner respectfully reminds Appellants

that the specified range of "pore sizes between 0 and 3 μm" in a "comprising" clause fails to exclude the express teaching of "the cells defined by the foamable binder material can be about 3 mm or less; specifically about 1 mm or less, more specifically about 0.3 mm or less, still more specifically about 0.1 mm or less" by Chen, as set forth above. In particular, "0 μm" reads on the cell walls of the foamed binder materials.

Finally, with respect to Appellants' argument "There is nothing in *Chen et al.* that would have motivated persons skilled in the art to modify the discussed pore sizes of *Chen et al.* in a manner to arrive at the presently claimed range" (Appeal Brief, page 9, third full paragraph), the Examiner repeats that Chen does expressly teach that progressively smaller pores are desirable, and concludes that even if the disclosure were found to lack anticipation, this suggestion of smaller and smaller pore sizes clearly would lead one of skill in the art to minimize cell size as such, in combination with good void volume increases internal surface area and improve absorption.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Victor S Chang
Examiner
Art Unit 1771

TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Conferees:
Terrel H. Morris -TM
Carol D. Chaney CC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	**Mail Stop APPEAL BRIEF - PATENTS**
Kent MALMGREN et al.	Group Art Unit: 1771
Application No.: 09/651,130	Examiner: Victor S. Chang
Filed: August 30, 2000	Confirmation No. 1064
For: ABSORBENT FOAM MATERIAL, A METHOD OF PRODUCING IT AND AN ABSORBENT STRUCTURE CONTAINING SAID FOAM MATERIAL	Appeal No.: 1

Mail Stop APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

This Reply Brief is in response to the Examiner's Answer, mailed on October 6, 2005, that was filed in response to the Appeal Brief that was filed on August 31, 2005 in connection with the above-identified application.

Reply to Examiner's Answer at Page 6, lines 2-6

In the Examiner's Answer, the Examiner asserts that "Chen does expressly teach that progressively smaller pores are desirable." *Examiner's Answer, Page 6.*

However, *Chen et al.* does not teach a continuous trend of smaller and smaller pores sizes. The Examiner appears to be relying on a disclosure in *Chen et al.*, at Column 42, lines 31-38, of

> the absolute diameter of the cells defined by the foamable binder material can be about 3 mm [3000 μm] or less; specifically about 1 mm [1000 μm] or less, more specifically about 0.3 mm [300 μm] or less, still more specifically about 0.1 mm [100 μm] or less, and most specifically from about 0.02 mm to about 0.2 mm [20 μm to about 200 μm].

This does not teach a continuous trend of smaller and smaller pore sizes, but rather teaches specific ranges. The disclosed ranges have a lower disclosed limit of 20 μm, and *Chen et al.* does not teach that pore sizes should be made progressively smaller past 20 μm. The simple inclusion of "or less" does not provide a disclosure of each and every pore size under 3000 μm all the way to zero.

When read as a whole, it is clear to one skilled in the art that *Chen et al.* does not contemplate a pore size less than 20 μm. No other discussion in *Chen et al.* demonstrates a teaching of material with a pore size less than 20 μm. Examples 1-6 in *Chen et al.*, at Columns 43-48, do not disclose material with a pore size less than 20 μm. None of Examples 1-6 in *Chen et al.* teach methods that would appear to overcome the difficulties of producing material having a pore size less than 20 μm.

Thus, *Chen et al.* does not expressly teach that progressively smaller pores are desirable.

Reply to Examiner's Answer at Page 6, lines 13-15

In the Examiner's Answer, the Examiner asserts that "the end point of 0 μm of the instantly claimed limitation inherently reads on the un-voided portion of Chen's swellable formed binder as claimed...." *Examiner's Answer, Page 6.*

Applicants note that the present claims include a limitation that the foam has "pore sizes between 0 and 3 μm." 0 μm is not a claimed limit.

Applicants also note that asserting a pore with a size of 0 μm is a specious argument. At that point there is no pore that exists to measure. Thus, the assertion has no bearing on the present claims.

Reply to Examiner's Answer at Page 6, lines 16-20

In the Examiner's Answer, the Examiner asserts that the disclosure in *Chen et al.* of "most specifically from about 0.02 mm to about 0.2 mm is clearly directed to a preferable or most populous range of pore size ... [and] nowhere does Chen state that such a range is limiting." *Examiner's Answer, Page 6.*

While *Chen et al.* does not explicitly state that the range of 0.02 mm to about 0.2 mm is limiting, applicants simply note that 0.02 mm [20 μm] is the smallest disclosed pore size. *Chen et al.* does not expressly recite a pore size below 20 μm.

Reply to Examiner's Answer at Page 7, lines 1-12

In the Examiner's Answer, the Examiner asserts that the difference between "gel liquid" and "capillary liquid" is merely semantics and thus the ability of "gel liquid" storage appears to be inherent. *Examiner's Answer, Page 7.*

While "gel liquid" has been defined as "liquid held in pores smaller than 3 μm" this is not an arbitrary limit.

Gel liquid is a liquid that is in a different form of storage from capillary liquid. Gel liquid is firmly bound in cells by the swelling cell walls. *See Specification, page 2, lines 29-37.* This liquid is physically distinct from the loosely bound capillary liquid. The physical difference is demonstrated when measuring liquid storage capacity by centrifuge retention capacity, in which saturated foam is centrifuged to remove loosely bound capillary liquid. After centrifuging, primarily gel liquid remains. This demonstrates that there is a physical, measurable difference between gel liquid and capillary liquid. The difference between "gel liquid" and "capillary liquid" is not, therefore, merely semantics.

The presently claimed invention recites that the foam material has a distribution of pore sizes between 0 and 3 μm and an absorption rate at wetting of at

least 0.4 ml/s for a round sample having a 50 mm diameter, a liquid distribution capacity at an inclination of 30° of at least 15 g/g and a liquid storage capacity of at least 9% measured through centrifuge retention capacity, for synthetic urine test liquid.

The resulting ability to store gel liquid and have a sufficient absorption rate, liquid distribution capacity and liquid storage capacity is not inherent in the disclosure of *Chen et al.*

The fact that a certain result or characteristic may occur or be present in *Chen et al.* is not sufficient to establish inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993). That is, "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (citations omitted).

Here, the Examiner has asserted that *Chen et al.* "expressly teaches essentially the same process of making the absorbent structure." *Examiner's Answer at Page 7, lines 20-21.*

As stated above, the claimed composition requires optimization of three separate properties, absorption rate, liquid distribution capacity, and liquid storage capacity, while producing a composition with the ability to store gel liquid.

One skilled in the art reading *Chen et al.* would have found a relatively complicated method of making a foam-reinforced fibrous network, in which the strength of the network is optimized to maintain void volume when under load. *See Chen et al., column 1, lines 6-65; column 15, line 49 to column 29, line 17.* Additionally, *Chen et al.* discloses that the foam/fiber composition is open-celled with bimodal pores resulting from both the fibrous structure and from the foam. See *Chen et al.*, column 41, line 25 to column 42, line 5.

One skilled in the art reading *Chen et al.* would not have found any discussion or teaching on how to manipulate process parameters to adjust the pore size to get gel liquid storage capabilities.

Thus, to arrive at the presently claimed invention, one reading *Chen et al.* would have had to manipulate a complex process with multiple parameters in order to optimize at least three properties, absorption rate, liquid distribution capacity, and liquid storage capacity, while producing a composition with the ability to store gel liquid and while being directed by *Chen et al.* to manipulate the strength of the network to maintain void volume when under load. Moreover, as shown in Table 1 of the present specification, variations in the process parameters of Examples 1-3 caused the absorption rate and the liquid distribution capacity to improve while the liquid storage capacity was worsened. *See Specification, page 14.* Thus, optimization of absorption rate, liquid distribution capacity, and liquid storage capacity is not a simple linear optimization but requires a careful balancing while also ensuring that a composition with the ability to store gel liquid is produced.

The Examiner has shown no reasonable support in *Chen et al.* for the determination that adjusting the pore size to get gel liquid storage capabilities while optimizing absorption rate, liquid distribution capacity, and liquid storage capacity necessarily flow from the teaching of *Chen et al.* Yet, this is required to show inherency. *See Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) ("In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.")

Thus, gel liquid storage is not inherent in *Chen et al.*

Conclusion

For the reasons discussed above, Appellant respectfully submits that the Examiner's decision finally rejecting claims 1-2, 4-13, 15 and 20 should be reversed and such action is earnestly solicited.

Respectfully submitted,
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